

The Clinical Impact of Echocardiography on Patients in Tertiary Centres in South Africa

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Submitted: 11 Sep 2018; **Accepted:** 17 Sep 2018; **Published:** 21 Sep 2018

Globally cardiovascular disease, commonly referred to as heart disease or stroke, is the number 1 cause of death with one in three deaths being as a direct result of cardiovascular diseases, claiming nearly 17.7million lives every year [1].

“Cardiovascular diseases, including high blood pressure and stroke, represents an estimated 60% of all chronic non-communicable disease deaths worldwide” [2]. According to the World Health Organisation 80% of cardiovascular disease deaths occur in low- to middle-income countries like South Africa.

“Cardiovascular disease is estimated among the top 3 causes of death in Sub-Saharan Africa.” [3,4]. In South Africa, non-communicable diseases are estimated to account for 43% of total adult deaths and still shows a steady rise [1]. According to the Heart and Stroke Foundation of South Africa (HSFSA), cardiovascular diseases are one of the largest burdens to treat. Heart disease and strokes are the biggest killers after HIV/AIDS [5]. One in every 5 deaths are caused by Coronary Vascular Disease (CVD) [6].

“More South Africans die of coronary vascular disease than all the cancers combined” [7]. According to the United Nations, coronary vascular disease is increasing amongst all age groups and is predicted to become the prime contributor to overall morbidity and mortality in the over 50-year age group. However, according to coronary vascular disease is taking its toll even amongst the younger age groups, with deaths projected to increase by over 40% in the 35-to-64-year age group by 2030 [2]. These are quite alarming statistics. The scale of coronary vascular disease poses a threat to the health system and calls for crisis-intervention. Conversely, most of the premature heart diseases and strokes are preventable.

Why cardiovascular diseases are such a problem in South Africa?

The prevalence of major risk factors such as hypertension, smoking, excessive alcohol consumption, unhealthy diet, a lack of physical activity, increased cholesterol and increased sugar and salt consumption has drastically increased in the last 10 years, both in urban and rural settings. Hypertension is the biggest single risk factor. According to the World Heart Federation (2017), one in three South African adults (33.7%) have hypertension and about 10% of the population over 15 years of age are pre-hypertensive.

The most shocking statistic is South Africa’s obesity rates, with 31.3% of adults in South Africa classified as being obese. According

to the proportion of cardiovascular disease deaths in women between the ages of 35-59 years is 1 and a half times more likely than that of women in the United States [1].

Whilst South Africa has been a leader with respect to tobacco legislation, 18% of the population still smoke tobacco and tobacco consumption and smoking has now stabilized at an unacceptably high level. Another shocking statistic was noted. “One in four girls and one in five boys between the ages of 2 and 14 years are overweight or obese” [1].

This also raises the question of whether this epidemic is due to genetic predisposition for heart disease or plain poor health examples from parents or guardians [21]. However, the biggest factor is the hidden scourge of hypertension, undiagnosed diabetes, and poor cholesterol which can only be diagnosed with tests [3,4]. “The prevalence of hypertension is said to be around 45% among adults in South Africa” [6].

While smoking, obesity and physical inactivity are more easily identified they are far more difficult to treat and alleviate [22].

Daily 225 people die from heart disease in South Africa. A lack of awareness around cardiovascular disease means many people go undiagnosed and untreated until it is too late [6].

There is less government funding available to combat these diseases. Several factors contribute to this trend. The first is an epidemiological transition which has seen a rise in non-communicable diseases. This is partly because of rapid urbanization and globalization. “Even in rural South Africa, associated diffusion of urban behaviours is adopting the coronary vascular disease (CVD) epidemic” [8].

The transition in South Africa is different from other countries in that it is complicated by a persisting high burden of HIV/AIDS and TB [9]. This poses several challenges regarding the management of this emerging epidemic in the face of persisting under nutrition and communicable diseases. It is particularly difficult because existing South African healthcare delivery structures are currently oriented towards acute care. Reversing the CVD epidemic will take more than just targeting individuals, their behaviours and lifestyle choices. Emphasis should be placed on population-wide policy development that supports a change in the health context and encourages the individual to make healthy personal decisions [10].

With these alarming statistics we are currently faced with a real epidemic when it comes to coronary heart disease and changes in the health sector should be adopted to fight this battle [23].

What has the South African government done to prevent the CVD epidemic?

Government targeted interventions to improve health, create awareness around the risk of excess sugar consumption and reduce smoking. These interventions would create awareness of cardiovascular disease and its risks. “A study done in 2013 by the Human Research in five South African Councils in Johannesburg suggested a link between sugar and obesity, concluding that the individual in South Africa consumes an excessive quantity of sugar” [11].

“2013 the South African government introduced legislation in line with targets set to reduce salt intake to less than 5g per person daily by 2020. In February 2016 South Africa became the first African country to announce plans to introduce a new tax on sugar-sweetened drinks. The ‘sugar tax’ has come into force from April 2017” [12].

Impact of echocardiography on patients in tertiary centres

According to the significant therapeutic impact of echocardiography has been accentuated over the last few years, especially in South Africa [13]. It has been shown to have a positive impact on the management of critical patients and influences the clinical management of these patients. When echocardiography screening is implemented at an early stage, appropriate care can be given immediately and waiting times for referrals to tertiary care settings or specialists can be reduced [24]. Therefore, the demand for echocardiography has increased drastically.

A normal echo is important in offering reassurance to patients, diagnostic assistance to the referring doctor and aiding in referral back to the primary level of care. An echocardiography gives important anatomical and functional information about the heart. A study done at the University of Cape Town showed that 84% of patient management was impacted by echocardiography and 56% of the echocardiograms that confirmed the referring doctor’s diagnosis still had a significant impact on the patient’s clinical management [14]. However, to this day a large majority of tertiary centres do not have access to echocardiography services [15].

Should this not become a routine scan for most patients admitted with a history of cardiovascular disease?

The significant change in clinical management occurring as a result of echocardiography raises the question if this should not become a routine scan for most patients admitted with a history of cardiovascular disease [25]. As mentioned previously, a large majority of tertiary centres in South Africa don’t have access to echocardiography services. “The lack of echocardiography training seems to be one of the main limitations of the rollout of this service to tertiary centres” [15]. The demand to access this service and the need for training in echocardiography has been highlighted in previous studies [15,16]. By providing an echo service in non-tertiary settings, patients can be screened and more appropriately referred to upstream specialists’ departments.

Financial impact

In the overburdened public health sector where continuity of care is frequently a problem, an echo may reduce time and costs [26].

The middle-class South African cannot afford to see a cardiologist every year and medical aid savings get depleted with one visit to the cardiologist. Being referred for only an echo by a physician or doctor is less expensive than going for a consultation at a cardiologist, which makes it more affordable and accessible for patients in the private sector. This also leads to less unnecessary referrals to specialists and quicker patient management.

Coronary vascular disease is predicted to be the prime contributor to the total morbidity and mortality of the over 50-year age group [2]. This age group is mostly on pitifully pension funds due to the increase of inflation in South Africa. Strangely enough, private medical services have become unaffordable to the group of people who needs this service the most. Transport problems raises another big issue among this age group, which places an even higher demand on mobile echocardiogram services in South Africa [27]. This brings me to another major problem: private medical aid affordability in South Africa. Only the majority of the rich and middle-class, which accounts for only 14% of the population, can afford medical aid, while the private health care system is currently serving 41% of the population. The remaining 45% of the population uses public health care systems due to the unaffordability of private medical aid rates [17].

For a country like South Africa, the number of cardiologists available for screening patients is extremely low if one considers the HSFA’s statistics that cardiovascular disease is one of the largest burdens to treat in South Africa [18]. The use of mobile echocardiography is one way to alleviate this problem. A diagnosis can be made through the transmitted images and an appropriate management plan suggested based on the findings before there is patient movement. With the right diagnosis, some patients would not need medical intervention and they can just be managed by medicines.

Training of interpretation and accreditation in the use of echo should be a priority for teaching and academic facilities in South Africa, especially for personnel working in general, emergency and family medicine [19]. The significant impact that echocardiography may have on the management of patients in the general wards or ICU indicates the importance of appropriate training in echocardiography [20].

“District hospitals should establish protocols in the communities they serve to assist with procurement and referrals from primary health care.” Different concepts of a general hospital limit the general availability to resource-constrained areas. Paradoxically, the clinical impact of echo may be of more value than the traditionally accepted clinical indications.” [14]. The rapidly growing burden of non-communicable diseases (NCD) Should encourage investment in service-based interventions like mobile echo services to local communities in South Africa. The additional value added by an echo assessment should make policymakers more aware of the limitation and restriction to access echocardiography services and encourage training of personnel in its use.

Limited access to echocardiography may negatively impact patient management. Access to investigations such as echo, often exclusively at the hands of cardiologists, remains restricted and uneven in South Africa and should be addressed immediately [15].

Conclusion

Current policy need to be urgently reviewed to insure optimum practice for managing Coronary Vascular Disease (CVD) on several fronts. Patients will be more suitably referred to specialist if Echocardiography services are available in tertiary settings in South Africa. Teaching and educational facilities should make certification in Echo a priority since Echo has a positive impact on patient management. Even the additional value added of a standard Echo study before referral to specialists and the effectiveness regardless of any abnormalities has been established in previous studies [15].

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